

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of fabricating a hollow mechanical part by diffusion welding and superplastic forming, the method comprising the following steps:

- a) providing at least two primary parts of superplastic material, said primary parts having two faces and a periphery;
- b) providing an anti-diffusion substance and depositing said anti-diffusion substance in a predefined pattern on at least one face of said two faces of said primary parts;
- c) stacking-up and assembling said primary parts together at their said periphery, with the exception of a passage-forming location, said primary parts forming a stack and defining between them a cavity, said at least one face being placed facing into said cavity;
- d) diffusion welding the stack under isostatic pressure;
- e) placing the welded assembly in a mold; and
- f) raising said mold to the superplastic forming temperature and injecting an inert gas at the superplastic forming pressure via said passage into said cavity, thereby causing the stack to inflate and implementing superplastic forming, enabling a blank of the mechanical part to be obtained;

wherein step b) is performed in application of the following sequence of operations:

- b1) applying a layer of anti-diffusion substance comprising a powder over the entire surface of said at least one face of the primary parts;
- b2) localized sintering of the anti-diffusion substance, without melting the powder, in said predefined pattern by the heating that results from localized application of a laser beam directly onto said powder along a track made up of at least one zone prior to the stacking-up, thereby producing, in said at least one zone, both

bonds between the particles of powder and also a diffusion phenomenon between the particles of powder and the material of said at least one face of the primary part; and

b3) removing the anti-diffusion substance from the regions that are not subjected to the laser beam.

**Claim 2 (Original):** A method of fabrication according to claim 1, wherein said anti-diffusion substance comprises said powder and a binder, and wherein said powder is an anti-diffusion filler constituted by a refractory material comprising at least one of the materials belonging to the group constituted by: yttrium oxide; alumina; graphite; and boron nitride; or any other powder made of a material that is compatible with the superplastic material.

**Claim 3 (Previously Presented):** A method of fabrication according to claim 1, wherein said anti-diffusion filler is an yttrium oxide powder with particles presenting a mean size of less than 50  $\mu\text{m}$ .

**Claim 4 (Original):** A method of fabrication according to claim 1, wherein said binder is water.

**Claim 5 (Original):** A method of fabrication according to claim 1, wherein step b1) of applying a layer of anti-diffusion substance is performed by spraying.

**Claim 6 (Previously Presented):** A method of fabrication according to claim 1, wherein step b2) of sintering is performed under an atmosphere of inert gas.

Claim 7 (Previously Presented): A method of fabrication according to claim 1, wherein said step b3) of removing said anti-diffusion substance is performed by washing.

Claim 8 (Original): A method of fabrication according to claim 1, wherein said laser is moved by a computer-controlled drive system.

Claim 9 (Original): A method of fabrication according to claim 8, wherein, for each zone, said drive system begins the path of the corresponding portion of the track inside said zone.

Claim 10 (Previously Presented): A method of fabrication according to claim 1, wherein said mechanical part is a hollow blade for a turbomachine and wherein in step a), three primary parts are provided comprising a suction side primary part, a central sheet, and a pressure side primary part.

Claim 11 (Previously Presented): A method of fabrication according to Claim 6, wherein said inert gas is argon.

Claim 12 (Previously Presented): A method of fabrication according to Claim 7, wherein said step b3) of removing said anti-diffusion substance is performed by brushing.

Claim 13 (Previously Presented): A method of fabrication according to Claim 10, wherein said mechanical part is a fan rotor blade.

Claim 14 (Previously Presented): A method of fabricating a hollow mechanical part by diffusion welding and superplastic forming, the method comprising the following steps:

- a) providing at least two primary parts of superplastic material, said primary parts having two faces;
- b) depositing an anti-diffusion substance in a pattern on at least one face of said two faces of said primary parts;
- c) stacking-up and assembling said primary parts together to form a stack and a cavity between said primary parts, said at least one face being placed facing into said cavity;
- d) diffusion welding the stack under isostatic pressure;
- e) placing the welded stack in a mold; and
- f) raising said mold to a forming temperature and injecting an inert gas at a forming pressure into said cavity, thereby causing the stack to inflate,  
wherein said anti-diffusion substance comprises a powder and step b) comprises localized sintering of the anti-diffusion substance by applying a laser beam directly onto said anti-diffusion substance along a track prior to the stacking-up, thereby fixing said anti-diffusion substance on said at least one face without melting the powder.

Claim 15 (Previously Presented): The method of fabricating according to Claim 14, further comprising:

removing the anti-diffusion substance from regions that are not subjected to the laser beam.

Claim 16 (Previously Presented): The method of fabricating according to Claim 1, wherein the localized sintering of the anti-diffusion substance occurs before the diffusion welding of the stack under isostatic pressure.

**Claim 17 (Previously Presented):** The method of fabricating according to Claim 1, wherein the removing of the anti-diffusion substance occurs before the diffusion welding of the stack under isostatic pressure.

**Claim 18 (Previously Presented):** The method of fabricating according to Claim 1, wherein the localized sintering of the anti-diffusion substance occurs before the assembly of the primary parts together at their periphery.

**Claim 19 (Canceled).**

**Claim 20 (Previously Presented):** The method of fabricating according to Claim 14, wherein the localized sintering of the anti-diffusion substance occurs before the diffusion welding of the stack under isostatic pressure.

**Claim 21 (Canceled):**

**Claim 22 (Currently Amended):** A method of fabricating a hollow mechanical part by diffusion welding and superplastic forming, the method comprising the following steps:

- a) providing at least two primary parts of superplastic material, said primary parts having two faces and a periphery;
- b) providing an anti-diffusion substance and depositing said anti-diffusion substance in a predefined pattern on at least one face of said two faces of said primary parts, said providing including,

- b1) applying a layer of anti-diffusion substance comprising a powder over the entire surface of said at least one face of the primary parts,
- b2) localized sintering of the anti-diffusion substance in said predefined pattern by the heating that results from localized application of a laser beam directly onto the powder along a track made up of at least one zone, thereby producing, in said at least one zone, both bonds between the particles of powder and also a diffusion phenomenon between the particles of powder and the material of said at least one face of the primary part, and
- b3) removing the anti-diffusion substance from the regions that are not subjected to the laser beam;
- c) after the localized sintering, stacking-up and assembling said primary parts together at their said periphery, with the exception of a passage-forming location, said primary parts forming a stack and defining between them a cavity, said at least one face being placed facing into said cavity;
- d) after the localized sintering of the anti-diffusion substance, diffusion welding the stack under isostatic pressure;
- e) placing the welded assembly in a mold; and
- f) raising said mold to the superplastic forming temperature and injecting an inert gas at the superplastic forming pressure via said passage into said cavity, thereby causing the stack to inflate and implementing superplastic forming, enabling a blank of the mechanical part to be obtained.

Claim 23 (New): The method of fabricating according to Claim 1, wherein the superplastic forming is performed in the at least one zone to which the laser was directly applied.

Claim 24 (New): The method of fabricating according to Claim 23, wherein the superplastic forming is performed only in the at least one zone to which the laser was directly applied.

Claim 25 (New): The method of fabricating according to Claim 14, wherein the superplastic forming is performed in an area of the track where the laser was directly applied.

Claim 26 (New): The method of fabricating according to Claim 22, wherein the superplastic forming is performed in the at least one zone to which the laser was directly applied.

Claim 27 (New): The method of fabricating according to Claim 1, wherein the diffusion welding of the stack under isostatic pressure includes welding the stack to join the primary parts, in the regions that were not subjected to the laser beam, when the regions are free of anti-diffusion substance.

Claim 28 (New): The method of fabricating according to Claim 14, wherein the diffusion welding of the stack under isostatic pressure includes welding the stack to join the primary parts in regions of the track free of anti-diffusion substance.

Claim 29 (New): The method of fabricating according to Claim 22, wherein the diffusion welding of the stack under isostatic pressure includes welding the stack to join the primary parts, in the regions that were not subjected to the laser beam, when the regions are free of anti-diffusion substance.